




Assistive Technology

Denise Gorelick EDUU-677





For people with autism, assistive technology (AT) encompasses a wide range of solutions both high and low tech, that can be beneficial or even life-changing. Under the Technology-Related Assistance for Individuals with Disabilities Act of 1988 AT is defined as any item that is used to develop, maintain, or improve functional skills of individuals with disabilities.


(Overview of Assistive Technology for Autism, 2021)



High and Low Tech Solutions

- Maintain or improve motor functional capabilities of individuals with disabilities
- Supports to provide access school work and academics
- Provide assistance at work
- At home support
- community-based instruction


(Tools for Life,2022).



As many as 40% of individuals with autism are nonverbal, and a significant proportion of those on the spectrum struggle with verbal communication. In addition, many individuals with autism experience at least some challenges with social communication.

Overview of Assistive Technology for Autism, 2021,





High tech assistive technology (AT) in the areas of communication and language:

- Typically computer-based
- Have sophisticated features
- Tailored to the specific needs of an individual student

(IRIS/Page 2, 2022)





GoTalk Communication Device Series



For more information on GoTalk:

<https://www.spectronics.com.au/catalogue/go-talk-communication-device-series>

- battery powered augmentative/alternative communication (AAC) devices
- Anyone including the user can records messages – any messages the user will likely need, in any language, dialect or accent.
- An overlay is created with pictures (words or symbols) to match messages and/or words
- The pictures help the user remember where to find messages.
- The user can “talk” simply by pressing on a picture to play a message.
- More than one overlay can be created to support the user
- Used by children with autism, Down Syndrome, or severe cerebral palsy – or any condition which limits speech.

Tablets and Smartphone APPS



Benefits of using devices like tablets, smart phones and/or other hand-held devices

- Flexibility (can be used for a variety of reasons and in various settings)
- Portable - easy for user to transport
- Use is widely acceptable and can also promote peer acceptance
- Solution to verbal communication problems
- Useful way to communicate & interact
- E-learning natural choice for visual learners
- Static & dynamic images as well as videos
- Appropriate for those with limited communication & language or challenges with verbal expression
- eye gaze technology for hands free use


(Azham et. al., 2021)



Speech Generating apps that include touch screen and eye tracking

For more information: <https://us.tobii-dynavox.com/pages/about-us>

tobii dynavox



Low tech assistive technology AT in the areas of
communication and language:

- Readily available
- Inexpensive
- Typically do not require batteries or electricity

(IRIS/Page 2, 2022)





Using PECS

- Facilitating appropriate requests and communications for the child with ASD who is nonverbal and/or has difficulty with language and communication
- Pictures representing objects, words and/or items familiar to the child (visuals)
- Requirements: A communicative partner and a physical prompter
- Identify and exchange image (picture) that accurately identifies and communicates the meaning the child is looking for followed by reinforcement of item or activity
- PECS is taught in six phases,
 - The first phase begins by teaching a person to give a single picture for a desired item or activity to a communicative partner
 - Then the method gradually builds in the next 5 phases and teaches how to differentiate between pictures and how to put them together in phrases
 - Individuals are trained to employ modifiers, answer questions, and comment in the more advanced phases (Lamb et. al., 2018)

For more information: Pyramid Educational Consultants: <https://pecsusa.com/pecs/>

Sign Language

According to de Leon, “Many children with autism have been able to learn and communicate successfully via sign language because it is visually based, unaided, and provides a mode of quick communication. Additionally, it is something that can be easily learned and used anywhere, at any time. By providing a way for the child to communicate you can help reduce negative behaviors that arise from the child’s inability to communicate their immediate wants and needs” (2021)

Basic Sign Language for Autism (de Leon, 2021)



For More information: <https://napacenter.org/aac-autism/>



Assistive technology (AT) in the areas of academics and/or cognition:

According to *Overview of Assistive Technology for Autism*, More than 30% of individuals with ASD are diagnosed with attention deficit hyperactivity disorder (ADHD) and up to 40% experience some level of anxiety. These issues, added to the core symptoms of autism (which include speech, social, and sensory challenges) create some significant issues in school and in the workplace” (2021).

High tech assistive technology in the areas of academics/cognition,

Software and Apps that help visual learners think, write, and communicate in the general education curriculum.

- Reading
 - Text-to-speech software
 - Accessible e-book reader (Bookshare.org)
- Writing
 - Speech recognition software (Google Docs)
 - Voice memo
 - Word prediction
- Mathematics
 - Calculator
 - Computer Aided Math Technology
 - Digital Graphing tools

- 4.0 Bluebee Pal Pro is a plush interactive learning tool with a FREE companion to support life skills and includes an educational app that connects to both iOS and Android devices (Bluebee Pals® | Educational Plush Tech Toy Companion, 2021)
- Children are encouraged to take risks by interacting with plush pets who engage with them in a nonthreatening manner. (Clare, 2016)



For more information on “BluebeePals” [CLICK HERE](#)



**An Accessible Online Library
for people with disabilities**



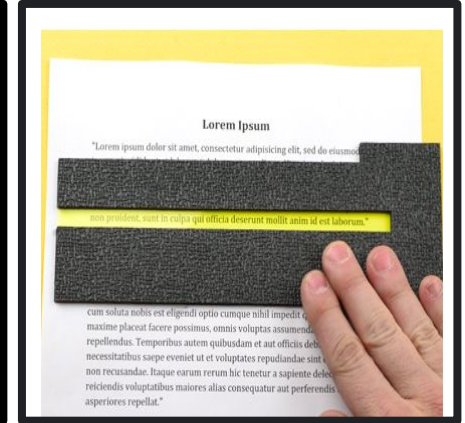
For more information on Bookshare.org [CLICK HERE](#)

Low tech assistive technology in the areas of academics/cognition:

Help visual learners think, write, and communicate in the general education curriculum.

- Reading
 - PMII (Peer Mediated Instruction & Intervention)
 - Highlighters
 - Colored overlays
- Writing
 - Graphic Organizers, Sentence Stems, Sentence Starters and Frames, word banks, lined paper and pencil grips
- Mathematics
 - Calculator
 - Graph Paper
 - Chunking for step by step calculations
 - Visuals
 - Manipulatives (eg: blocks)

(Lightner, 2022)



Iris, 2022

Assistive Technology (AT) in the area of Transition

Effective vocational education and training is necessary in preparing people with intellectual and developmental impairments (IDD), including Autism (ASD), for transition to the workplace and into independent living (Gilson et. al., 2017)

According to Rast, “Transition-age youth with autism (TAY-ASD) experience poor employment outcomes and gaps in services that could assist them in securing jobs. Vocational rehabilitation (VR) is a source of public assistance for people with disabilities seeking employment and TAY-ASD are a growing segment of VR service users. Postsecondary education (PSE) is essential for building vocational skills, contributing to employment satisfaction and better wages” (2020).

- Funds employment services
- Services are administered by states using a combination of federal and state funds
- Delivered through an extensive network of local VR offices and community rehabilitation providers
- Prepare for and engage in competitive integrated employment

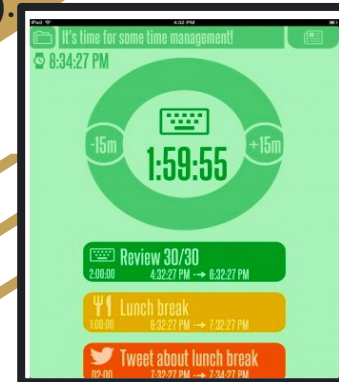
Low and High tech Assistive Technology (AT) for community-based Instruction & independent living skills

For students with Autism Spectrum Disorders, Community Based Instruction is an important aspect of the learning process. It gives individuals the opportunity to learn outside of the usual classroom setting. Community Based Instruction differs from traditional field trips in that it focuses on the needs of the community (ie. mall, theatre, museum). These community trips focus on career/work-related learning in a community environment not far from the students' homes (Community Based Instruction, n.d.).

- High Tech: Smart phones, tablets, and computers with programs for organizing, managing calendars, setting reminders, and keeping instructions
 - App for self-management (eg: 30/30) helps users stay on target by notifying them when it's time to take a break or move on to a different assignment. Each task has its own timer, which is set by the users. Users will be notified, and the app will automatically cycle to the next task on the list, moving the finished task to the bottom. (Can be purchased on Google Play).
- Low Tech: Paper-based organizers, like day planners or visual schedules

Autism Daily/Weekly Visual Schedule and Planner [CLICK HERE](#)

The image shows two paper-based visual schedules. The left one is a 'DAILY PLANNER' with a 'DATE' field and a 'TODAY' section. It includes three mood sections: 'MORNING MOOD', 'AFTERNOON MOOD', and 'EVENING MOOD', each with five smiley face icons. The right one is a 'Weekly Planner' with a 'Date' field and a 'Notes' section. It has a 'Singer' field and a 'Mood' field.



Work Cited

- Azham Hussain, Emmanuel O.C Mkpojiogu, & Pauline Chiamaka Okoroafor. (2021). Assisting Children with Autism Spectrum Disorder with Educational Mobile Apps to Acquire Language and Communication Skills: A Review. *International Journal of Interactive Mobile Technologies*, 15(06), 161–170. <https://doi-org.umassglobal.idm.oclc.org/10.3991/ijim.v15i06.20621>
- Bluebee Pals® | Educational Plush Tech Toy Companion. (2021, October 30). Bluebee Pals®. <https://www.bluebeepals.com/>
- de Leon, M. M. S. (2021b, August 31). *Benefits of Sign Language and Other Forms of AAC for Autism*. NAPA. <https://napacenter.org/aac-autism/>
- Clare, J. (2016, April 14). *Year-Round Resources for Autism*. Edutopia. Retrieved 2022, from <https://www.edutopia.org/blog/year-round-resources-for-autism-jayne-clare>
- Community Based Instruction. (n.d.). ALL THINGS ASD. Retrieved 2022, from [http://allthingsasd.weebly.com/community-based-instruction.html#:~:text=Community%20Based%20Instruction%20is%20an,for%20Autism%20Spectrum%20Disorders%20students.&text=typical%20field%20trip%2C%20\(ie.,far%20from%20the%20students'%20home](http://allthingsasd.weebly.com/community-based-instruction.html#:~:text=Community%20Based%20Instruction%20is%20an,for%20Autism%20Spectrum%20Disorders%20students.&text=typical%20field%20trip%2C%20(ie.,far%20from%20the%20students'%20home)
- Gilson, C. B., Carter, E. W., & Biggs, E. E. (2017). Systematic Review of Instructional Methods to Teach Employment Skills to Secondary Students With Intellectual and Developmental Disabilities. *Research & Practice for Persons with Severe Disabilities*, 42(2), 89–107. <https://doi-org.umassglobal.idm.oclc.org/10.1177/1540796917698831>

Work Cited

IRIS | Page 2: AT Devices. (2022). IrisCenter. <https://iris.peabody.vanderbilt.edu/module/at/cresource/g1/p02/#content>

Lamb, R., Miller, D., Lamb, R., Akmal, T., & Hsiao, Y. (2018). Examination of the role of training and fidelity of implementation in the use of assistive communications for children with autism spectrum disorder: A meta-analysis of the Picture Exchange Communication System. *British Journal of Special Education*, 45(4), 454–472. <https://doi-org.umassglobal.idm.oclc.org/10.1111/1467-8578.12243>

Lightner, L. (2022, January 5). *Low Tech Assistive Technology | Examples | Communication | Ideas | Reading And Writing*. A Day in Our Shoes. <https://adayinourshoes.com/low-tech-assistive-technology/#h-low-tech-at-options-for-reading>

O'Neill, S. J., Smyth, S., Smeaton, A., & O'Connor, N. E. (2020). Assistive technology: Understanding the needs and experiences of individuals with autism spectrum disorder and/or intellectual disability in Ireland and the UK. *Assistive Technology*, 32(5), 251–259. <https://doi-org.umassglobal.idm.oclc.org/10.1080/10400435.2018.1535526>

Overview of Assistive Technology for Autism. (2021, February 8). Verywell Health.

<https://www.verywellhealth.com/assistive-technology-for-autism-5076159#:~:text=Examples%20include%20battery%2Doperated%20sensory,in%20children%20on%20the%20spectrum.>

Work Cited

Rast, J. E., Roux, A. M., & Shattuck, P. T. (2020). Use of Vocational Rehabilitation Supports for Postsecondary Education Among Transition-Age Youth on the Autism Spectrum. *Journal of autism and developmental disorders*, 50(6), 2164–2173.

<https://doi.org/10.1007/s10803-019-03972-8>

Tools for Life. (2022). Georgia Tech; Tools for Life. Retrieved 2022, from

<https://gatfl.gatech.edu/assistive.php#:~:text=Low%20tech%20AT%20are%20devices,paper%20and%20open%20to%20communicate>